

Field/Trip Blank Collection for Carbon in the PM_{2.5} Chemical Speciation Network (CSN)

Changes with the New URG3000N Carbon Measurement System

The speciation program is undergoing a change to the carbon sampling and analysis methods. New URG-3000N carbon sampling devices, that are identical to the IMPROVE sampler with the addition of active flow control, are being added to the speciation monitoring sites. In addition, the analysis method will be changed to the IMPROVE Thermal Optical Reflectance (TOR) method of analysis. Sampling via the URG-3000N and the IMPROVE TOR method will commence on May 3rd. In order to more fully address the inconsistency in carbon measurements between the urban speciation and rural IMPROVE programs, the method of blank collection and artifact correction will also change. The purpose of this document is to provide the revised blank collection schedule for the PM_{2.5} Urban Chemical Speciation Network (CSN). Details will follow later this year on the method for artifact correction.

Background

The IMPROVE program currently collects ‘dynamic’ quartz filter field blanks at all sites. A ‘dynamic’ field blank is defined by IMPROVE as a blank that is treated the same as standard network filters, including being placed in the sampler for the duration of sample collection (24 hours), but not sampled. In addition, after-filters or backup quartz filters are collected for every sampling event at a subset of sites selected to cover a variety of regions and aerosol conditions. Only the backup filters are used for carbon artifact correction. For more information on the procedures used in the IMPROVE program, refer to “Artifact Corrections in IMPROVE”¹.

The CSN and IMPROVE also use different quartz filter types (Whatman QMA versus Pall Sciences). The filter type will also be changed for the URG-3000N from Whatman QMA to Pall Sciences quartz filters. Whatman QMA quartz filters will continue to be used for the CSN sites that have not yet installed a URG-3000N sampling device.

Blank Collection in the Chemical Speciation and New Carbon Network

The CSN will adopt the same procedures as IMPROVE for the collection of 24-hour field blanks and backup quartz filters at URG-3000N sampling sites; however, the collection schedule will differ and backup quartz filters will be collected at all sites. The procedures for collecting field blanks will remain the same for those sites without URG-3000N samplers. In order to obtain enough blank information for data adjustments, short-term blank data collection procedures will be needed (e.g., increased backup filter collection for the first year of the new program). See Table 1 for blank type and frequency of collection.

¹ Paper No. 15. Artifact Corrections in IMPROVE. Regional and Global Perspectives on Haze: Causes, Consequences, and Controversies – Visibility Specialty Conference, Air & Waste Management Association, Asheville, NC, October 25-29, 2004.

The following changes will be made:

- The percentage of field blanks collected in the current network will be reduced from 10% to 5%.
- Collection of 3% trip blanks will continue at all sites.
- Trip blanks collected on the “Alternate Sampling Schedule” (see Attachment A) will be discontinued. Sites currently on the alternate schedule can stay on this schedule, but no sample will be obtained on the alternate schedule dates.
- We will begin collecting 24-hour field blanks at the Phase I URG-3000N sites only at a frequency of 10%.
- Backup quartz filters will be collected at all URG-3000N Phase I sites at a frequency of 30%.

Table 1. Frequency of Blank Filter Collection at the CSN.

Program	Blank Type and Site Frequency	Frequency of Collection	Blanks per year
Chemical Speciation Network Sites (Teflon and Nylon Filters)	Field 1-3	Reduced to 5% or one per 2 months	6
	Field 1-6	Reduced to 5% or one per 4 months	3
	Trip 1-3	3% or one per 3 months	4
	Trip 1-6	3% or one per 6 months	2
URG-3000N Carbon Sites (Quartz Filters)	24-hr. Field Blank 1-3	10% or one per month	12
	24-hr. Field Blank 1-6	10% or one per 2 months	6
	Trip 1-3	3% or one per 3 months	4
	Trip 1-6	3% or one per 6 months	2
	Backup Filter 1-3	30% or 3 per month	36
	Backup Filter 1-6	30% or 2 per month	24

Attachment A

2007 Alternate 1-in-3 Sampling and return Shipping Schedule

The 1-in-3 day schedule is a pdf file that was sent with this document. The Alternate shipping schedule was implemented to address Friday-Monday sampling dates, where a monitoring agency cannot authorize weekend or holiday time to retrieve exposed filters. We are proposing that, unless an agency needs extra trip blanks to meet Measurement Quality Objectives (MQOs), that the alternate date filter packages no longer be sent. For example, Monday May 21st is an alternate date. No package of filters will be sent for this date and no sampling will take place. In the case of a Friday sampling the Friday filters will be collected on the following Monday and no sampling will occur on that particular Monday. Monday sampling events would be set up on Friday, and take place as usual. All samples should be sent back to Research Triangle Institute, or the site's appropriate lab services contractor, with the Chain of Custody form marked as a trip blank.

The Alternate Schedule for calendar year 2007 is listed below for those agencies choosing to utilize it.

- MLK Holiday; Monday, January 15th, is an alternate date.
- Friday, February 2nd, is an alternate date.
- Monday February 19th is Washington's Birthday. Tuesday, February 20th, is the alternate date.
- Monday, February 26th, is an alternate date.
- Friday, March 16th, is an alternate date.
- Monday, April 9th, is an alternate date.
- Friday, April 27th, is an alternate date.
- Monday, May 21st, is an alternate date.
- Memorial Day, May 28th; May 27th is the scheduled run date; OK to pick up on Tuesday, May 29th.
- Friday, June 8th, is an alternate date.
- Monday, July 2nd, is an alternate date.
- Friday, July 20th, is an alternate date.
- Monday, August 13th, is an alternate date.
- Friday, August 31st, is an alternate date. Set up and run Labor Day, Monday, September 3rd, as the scheduled run date.
- Monday, September 24th, is an alternate date.
- Monday, October 8th is Columbus Day. Set up Saturday, October 6th, as run date; OK to pick up on Tuesday, October 9th. Tuesday, October 9th, is an alternate date.
- Friday, October 12th, is an alternate date.
- Monday, November 5th, is an alternate date.
- Veteran's Day, November 12th; November 11th is the scheduled run date; OK to pick up on Tuesday, November 13th.
- Friday, November 23rd, is an alternate date.
- Monday, December 17th, is an alternate date.